

Sinske HATTORI* and Obchant THAITHONG**: *A Frullania*
collection made by Dr. T. Tuyama in Laos

服部新佐*, オブチャン・タイトン**: 津山尚博士採集ラオス産
ヤスデゴケ属コレクション

In 1957-58 Dr. T. Tuyama, Professor Emeritus of Ochanomizu University, collected plants around and NE of Phongsavanh (N of Xieng Khouang) in Laos, from which the bryophytes were sent to us. Following is an alphabetical list of the *Frullania* species recognized in the 14 specimens collected by him. We found 10 species of *Frullania*, from which 2 species are here described as new. Most of the other 8 species have not been reported previously from Laos.

1) *Frullania* (*Trachycolea*) *ericoides* (Nees) Mont.

Summit of Phon San (2218 m), ca. 30 km NEN of Phongsavanh, Dec. 31, 1957, no. 1 (on bark of tree with *F. ornithocephala*, *F. wallichiana*), no. 2 (on bark of tree with *F. wallichiana*), no. 3 (on bark of tree); ca. 20 km NE of Phongsavanh, ca. 1000 m, Jan. 3, 1958, no. 8 (on branches of tree with *F. gracilis*, *F. tuyamae*), no. 10 (on branches of tree with *F. tuyamae*), no. 11 (on bark of tree with *F. gracilis*, *F. sackawana*).

Distr.: Widely distributed in warm to tropical regions of the world.

2) *F. (Frullania) evoluta* Mitt. var. *tagawana* Hatt. & Thaith.

Ban Phu Phao, ca. 25 km NE of Phongsavanh, ca. 1500 m, Jan. 2, 1958, no. 4 (on bark of tree; + *F. meyeniana*, *F. ornithocephala*, *F. subvalida*, *F. warnckeana*).

Distr.: India, Thailand (var. *evoluta* known only in India).

3) *F. (Frullania) gracilis* (Reinw. et al.) Dum.

Ca. 20 km NE of Phongsavanh, ca. 1000 m, Jan. 3, 1958, nos. 6 & 7 (both on bark of trees; + *F. subvalida*), no. 9 (on bark of tree; + *F. ericoides*, *F. tuyamae*), no. 11 (on bark of tree; + *F. ericoides*, *F. sackawana*).

Distr.: Tropical regions of Asia.

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4) *F. (Frullania) meyeniana* Lindenb.

Ban Phu Phao, ca. 25 km NE of Phongsavanh, ca. 1500 m, Jan. 2, 1958, no. 4 (on bark of tree; +*F. evoluta* var. *tagawana*, *F. ornithocephala*, *F. subvalida*, *F. warnckeana*).

Distr.: Widely distributed in subtropical to tropical Asia, and Hawaii and other Pacific Islands.

5) *F. (Trachycolea) ornithocephala* (Reinw. et al.) Nees.

Summit of Phou San, ca. 30 km NEN of Phongsavanh, Dec. 31, 1957, no. 1 (on bark of tree; +*F. ericoides*, *F. wallichiana*); Ban Phu Phao, ca. 25 km NE of Phongsavanh, ca. 1500 m, Jan. 2, 1958, no. 4 (on bark of tree; +*F. evoluta* var. *tagawana*, *F. meyeniana*, *F. subvalida*, *F. warnckeana*); around the farm of Mr. Hase, ca. 20 km NE of Phongsavanh, ca. 1000 m, Jan. 3, 1958, no. 13 (on branch of tree).

Distr.: Tropical Asia.

6) *F. (Homotropantha) sackawana* Steph.

Around the farm of Mr. Hase, ca. 20 km NE of Phongsavanh, ca. 1000 m, Jan. 3, 1958, no. 11 (on bark of tree; +*F. ericoides*, *F. gracilis*, *F. subvalida*).

Distr.: Japan, Thailand.

7) *F. (Trachycolea) subvalida* Hatt. & Thaith., sp. nov. Fig. 1.

A *Frullania valida* Steph., species japonica et simillima, differt lobis foliorum late obovatis vel fere orbiculatis, dorsale propaguliferis, saepe latioribus quam longioribus, lobulis majoribus, ampliatis ad apicem, stylis multo majoribus, saepe foliaceis, amphigastriis ± majoribus, late obovatis vel fere orbiculatis.

Plants medium-sized, brown to reddish-brown in herbaria, in patches on bark of trees; stems 2.5–3.5 cm long, 0.13–0.15 mm in diameter, ca. 1.6 mm wide with leaves, irregularly pinnately branched, branches obliquely spreading. Lobes of stem-leaves densely imbricate, ± obliquely spreading, dorsally extending the stem-width beyond the farther edge of stem, concave with incurved apex, when flat widely obovate or nearly orbicular, ca. 1 mm long, 1–1.2 mm wide, apex rounded, dorsal base strongly appendiculate, appendages ligulate, incurved; cavities of marginal cells quadrate or nearly so, ca. 15 × 15 μ, of median cells 25–30 × 15 μ, of basal cells 35–50 × 15–25 μ, walls of marginal cells equally thickened, of median cells thick with large trigones and intermediate thickenings, of basal cells with strongly bulging, confluent trigones so that nearly trabeculate; leaf-lobules large, widely galeate, usually

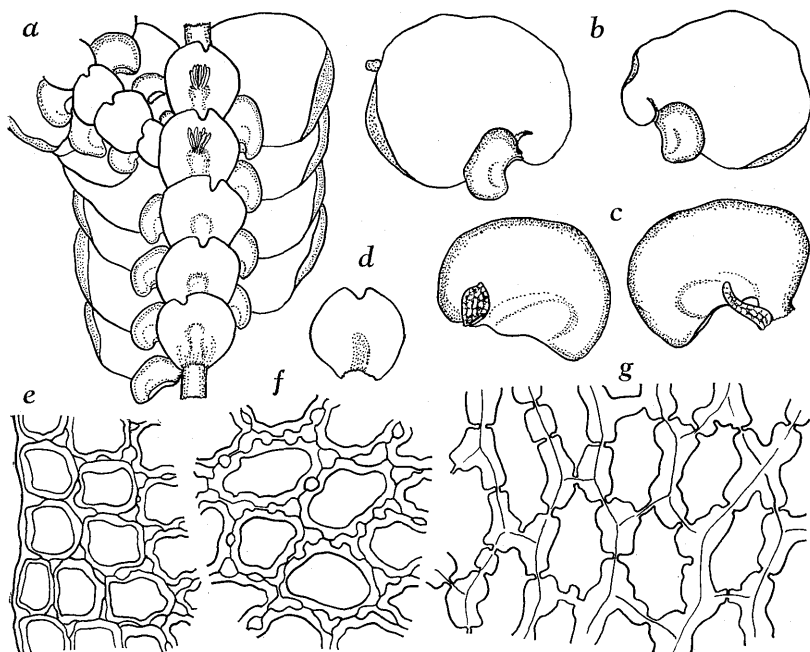


Fig. 1. *Frullania subvalida* Hatt. & Thait. a. Portion of stem, ventral view, $\times 21$. b. 2 stem-leaves, $\times 21$. c. 2 lobules of stem-leaves with styli, $\times 49$. d. Stem-underleaf, $\times 21$. e-g. Cells of lobe of stem-leaf, e from margin, f from middle, g from base, all $\times 417$. Drawn from type by O. Thaitong.

inclined downward at angles of 45° or more, more or less gibbous toward the edge where beak is not well differentiated, curving inward and obtuse, apex widely rounded, mouth subtruncate to sinuose; styli comparatively large, filiform to foliaceous, ca. 20-celled. Stem-underleaves loosely imbricate, ca. 3.5 times as wide as the stem, nearly flat, with slightly recurved lower lateral margins, widely obovate to more or less orbicular, ca. 0.55 mm long, 0.6 mm wide, narrowed toward non-appendaged base, 1/7-1/6-bifid, sinus obtuse, lobes triangular, acute to obtuse, insertion subtransverse, rhizoid-initial area at middle, usually convex, rhizoids hyaline, in short bundles. Propagules often seen on the dorsal surface of leaf-lobes.

Ban Phu Phao, ca. 25 km NE of Phongsavanh, ca. 1500 m, Jan. 2, 1958, no. 4 (on bark of tree; +*F. evoluta* var. *tagawana*, *F. meyeniana*, *F. ornithocephala*, *F. warnekeana*); 2 km E of Mr. Hase's farm, ca. 20 km NE of

Phongsavanh, ca. 1000 m, Jan. 3, 1958, no. 6, no. 7—Holotype in NICH (both on bark of trees; +*F. gracilis*); around the farm of Mr. Hase, ca. 20 km NE of Phongsavanh, Jan. 3, 1958, no. 11 (on bark of tree; +*F. ericoides*, *F. gracilis*, *F. sackawana*).

Distr.: Endemic.

This new species resembles the Japanese *Frullania valida* Steph. However, the latter has usually ovate-oblong leaf-lobes without dorsal propagules, smaller leaf-lobules with a narrower distal portion where the beak is well-developed, much smaller, filiform styli, and more or less narrower, obovate-obcuneate underleaves. Unfortunately no gynoeceium is found in this new species, so that the actual relation of this species to *F. valida* is not very clear.

8) *Frullania* (*Trachycolea*) *tuyamae* Hatt. & Thaith., sp. nov. Fig. 2.

A *Frullania ericoides* (Nees) Mont. differt lobis foliorum antice haud recurvis, abundanter propaguliferis, propagulis e cellulis marginalibus originatis, elongatis, saepicule ramosis, lobulis foliorum haud variabilibus, constante campanulatis, longioribus quam latioribus.

Plants small, reddish-brown in herbaria, creeping on bark of trees; stem 2-3 cm long, 1.3-1.5 mm wide with leaves, 0.1-0.12 mm in diam., bipinnately branched; branches obliquely spreading. Lobes of stem-leaves obliquely squarrosely spreading, \pm concave or nearly flat, not recurved dorsally, ovate to orbicular, 0.5-0.6 mm long and wide, extending as wide as the stem-width beyond the farther edge of stem, dorsal margin arched toward the rounded-appendaged base, apex obtuse to rounded, usually with abundant marginal propagules; cavities of marginal cells (many of which are ocellus-like) 10-15 μ long and wide, pale yellow to pale brown, walls brown and thin, cavities of middle cells 23-43 μ long and 10-15 μ wide, pale yellow to brown, walls thin, \pm sinuate with subnodulose trigones and often also with intermediate thickenings, brown, cavities of basal cells 23-45 μ long and 20-35 μ wide, pale yellow to reddish-brown, walls thin, with nodulose and often confluent trigones, pale yellow; leaf-lobules comparatively large, campanulate, 0.3-0.35 mm long, 0.25-0.3 mm wide, equally inflated, mouth truncate; styli filiform, 5-7 cells long, 1-2 cells wide at base. Stem-underleaves flat, appressed to stem, distant, 3-4 times as wide as the stem, obovate, 0.3-0.35 mm long, 0.4-0.45 mm wide, 1/3-bilobed, lobes triangular, obtuse to subacute, with blunt lateral tooth; sinus often wide, obtuse to acute, rhizoid-initial area almost at

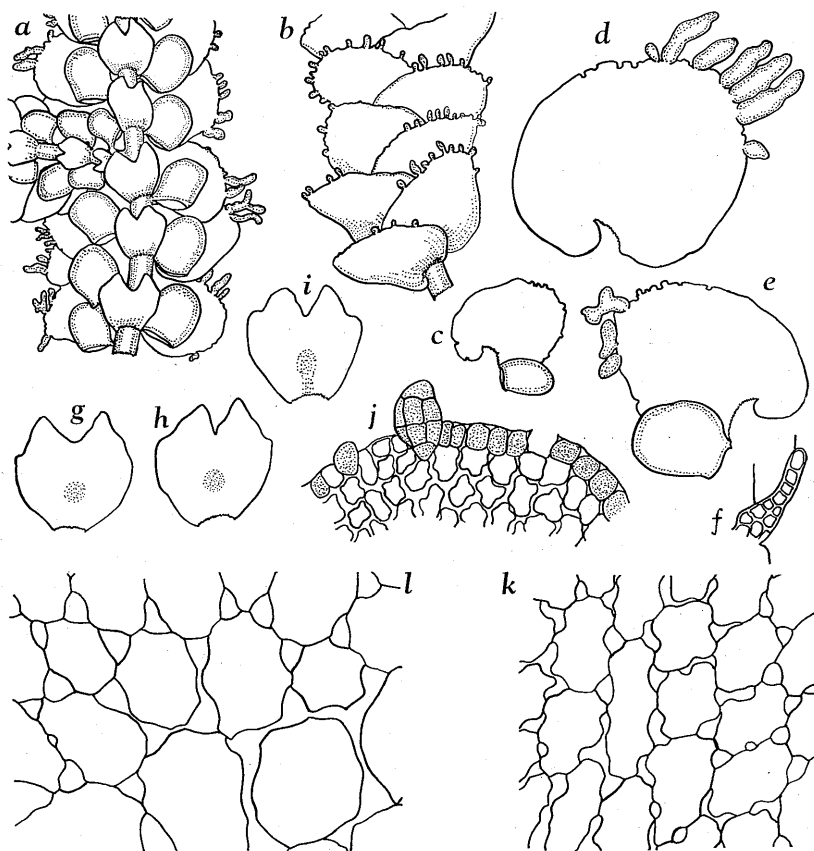


Fig. 2. *Frullania tuyamae* Hatt. & Thaith. a-b. Portions of stem, a ventral v., $\times 21$. c-e. Stem-leaves flattened, c $\times 21$, d-e $\times 42$. f. Stylus, $\times 128$. g-i. Stem-underleaves flattened, $\times 42$. j-l. Cells of lobe of stem-leaf, j from margin, dotted cells are ocellus-like cells which develop into propagules, $\times 210$, k from middle, l from base, both $\times 417$. Drawn from type by O. Thaithong.

center of underleaf, rhizoids brown, in a long bundle. Many marginal propagules of leaf-lobes grow to be an irregular bar and often branch when still attached. Many colored and ocellus-like marginal cells divide to initiate propagules.

Ban Phu Phao, ca. 25 km NE of Phongsavanh, ca. 1500 m, Jan. 2, 1958, no. 4 (on bark of tree with *F. evoluta* var. *tagawana*, *F. meyeniana*, *F.*

ornithocephala, *F. warnckeana*), 2 km E of Mr. Hase's farm, ca. 20 km NE of Phongsavanh, ca. 1000 m, Jan. 3, 1958, no. 5 (on bark of tree), no. 8 (on branches of tree; +*F. ericoides*, *F. gracilis*), no. 10—Holotype in NICH (on branches of tree; +*F. ericoides*); around the farm of Mr. Hase, Jan. 3, 1958, nos. 12 & 14 (both on bark of trees).

Distr.: Endemic.

This new species, which was named for the collector, Prof. T. Tuyama, seems to be closely related to *Frullania ericoides* (Nees) Mont. However, in this new species the leaf-lobes are never recurved dorsally and have abundant marginal propagules elongating to be an irregular bar which often branches even when still attached; the leaf-lobules are not variable in size and shape (constantly long-campanulate), longer than wide. In contrast, in *F. ericoides* the leaf-lobes are usually more or less strongly recurved dorsally and lack such marginal propagules, and the leaf-lobules are variable in shape (wider than long) and size even on the same shoot.

9) *F. (Chonanthelia) wallichiana* Mitt.

Summit of Phon San (2218 m), ca. 30 km NEN of Phongsavanh, Dec. 31, 1957, no. 1 (on bark of tree; +*F. ericoides*, *F. ornithocephala*), no. 2 (on bark of tree; +*F. ericoides*).

Distr.: Tropical Asia.

10) *F. (Frullania) warnckeana* Hatt.

Ban Phu Phao, ca. 25 km NE of Phongsavanh, 1500 m, Jan. 2, 1958, no. 4 (on bark of tree; +*F. evoluta* var. *tagawana*, *F. meyeniana*, *F. ornithocephala*, *F. subvalida*).

Distr.: Thailand.

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津山尚博士が ラオスで採集された折、コケ類にも気をつけて10包余の 樹皮性のコケ

標本を送っていた。主に ヤスデゴケ属の種で協同研究の結果10種を確認した。そのうち2種は新種で、他も殆んどラオス末記録のものであった。ラオスのフロラが殆んど手つかずの故であらう。同国、特に北方山岳地帯には、相接する北ベトナムの山岳地帯と共に、未だ沢山面白いコケがみつかることと思われる。

□ M.R.D. Seaward: **Lichen Ecology**. Academic Press Inc. (London) Ltd. 24/28 Oval Road, London NW1 7DX. 550 pp., \$ 23.00, 1977. 14名の学者がそれぞれ専門分野を担当した11章、2付録、索引2種で550頁からなる大冊。イスラエルやフィンランドの学者もいるが、全文が英語で統一されている。順をおって各章の表題を示すと次の通りで、いわゆる地衣学者ばかりでなく、生態学者にも参考になると思うので敢て本誌に紹介する。1) 緒言; 2) 環境の変化と地衣類の分類; 3) 開拓, 成長, 遷移と競争; 4) 地衣類と無脊椎動物群集; 5) 地衣類と脊椎動物; 6) 北方の針葉樹林帯の地衣類; 7) 寒冷荒野の地衣類; 8) 高熱不毛地または高熱半不毛地の地衣類; 9) 人工基物上の地衣群集; 10) 英本国の地衣群集; 11) 英本国における地衣類の保護; 付録A) 全世界の地衣フロラの文献; B) 用語の説明。分類索引と項目索引。 (佐藤正己)

□ Eiji Takahashi: **Electron Microscopical Studies of the Synuraceae (Chrysophyceae) in Japan**. Taxonomy and Ecology. 194 pp. (incl. 68 pls.) 東海大学出版会 (1978) 7000 円。著者は約20年間主として日本産の黄金色藻類 (Chrysophyceae) の分類学的研究に従事してきたが、今回もっとも得意とするシヌラ科 (Synuraceae) の成果を纏めて出版した。これは著者の博士論文でもある。シヌラ科の藻類は単細胞性または群体性で、体表に屋根瓦を敷きつめたように珪酸質の鱗片をつけているので、種の階級の識別形質には鱗片の形態が重視される。いきおい最近種の同定に電子顕微鏡による観察が要求されてきた。著者は日本各地の陸水域96ヶ所より6属 (*Mallomonas*, *Mallomonopsis*, *Paraphysomonas*, *Synura*, *Chrysosphaerella*, *Spiniferomonas*), 46種4変種5型のシヌラ科の藻類を得、これらを光学及び電子顕微鏡により精査した。論文の内容はおよそ三部からなる。識別形質として採用される鞭毛、鱗片及び被殻等の形態の概説、種の記載及び地理的分布などである。それぞれの種については豊富な電顕写真 (96葉) と光顕による描写図が添えられる。黄金色藻については、従来日本では本格的な分類の仕事がほとんどなかっただけに、日本におけるこの分野の今後の研究に高橋永治博士の今回の労作の貢献は大きい。著者の永年の労を多しきたい。 (千原光雄)